

Fewer Complications Performing Total Hip Arthroplasty Through a Direct Anterior Approach for Femoral Neck Fracture

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Background/Purpose: There is growing evidence that active, elderly patients with a displaced femoral neck fracture should be treated with a total hip arthroplasty (THA). In this patient population, THA has led to better patient outcomes and fewer reoperations as compared to open reduction and internal fixation and hip hemiarthroplasty. However, multiple studies have demonstrated higher dislocation rates in THA for treatment of hip fracture. THA for primary osteoarthritis and hip hemiarthroplasty for fracture performed through a direct anterior approach has been associated with lower rates of dislocation. There are no studies comparing patient outcomes based on approach for THA in the setting of hip fracture. The purpose of this study was to compare patient outcomes and complications relative to surgical approach. Our null hypothesis is that there would be no difference in patient outcomes and complications between patients undergoing THA for hip fracture using a direct anterior approach as compared to a posterior approach.

Methods: Following IRB approval, we retrospectively reviewed patients who presented to our Level I trauma center with an acute, displaced femoral neck fracture from 2004-2014. Patients were excluded if they had less than 6 months of follow-up. Demographic data including age, sex, mechanism, and comorbidities were recorded. Surgical approach, arthroplasty components, and intraoperative complications were reviewed. Patient outcome data including mortality, infection, dislocation, hematoma, venous thromboembolism (VTE), and secondary surgeries were recorded. Deep infection was defined as any infection deep to the fascial layer. All patients received 4 weeks of VTE prophylaxis, and all patients initiated weight bearing on the first postoperative day.

Results: Between 2004-2014, 88 patients with displaced femoral neck fracture were treated with THA. 32 patients were excluded for less than 6 months follow-up. The remaining 56 patients had a mean follow-up of 19 months (range, 6-91 months). The most common injury mechanism was ground level fall (77%), followed by fall from height (15%) and skiing (8%). 30-day and 1-year mortality for the entire patient cohort was 4.5% (4/88) and 12.5% (11/88), respectively. There were 35 patients in the direct anterior approach cohort with a mean age of 70 years (range, 30-92 years) and 55% were female. There were 21 patients in the posterior approach cohort with a mean age of 72 years (range, 46-84) and 71% were female. The overall complication rate was significantly higher in patients receiving a posterior approach (48%) as compared to patients in the anterior approach cohort (17%; $P = 0.03$). The overall postoperative infection rate was 7%, and the deep infection rate was 2%. There were significantly more postoperative infections in the posterior approach group (19% vs 0%, $P = 0.016$). There were more dislocations in the posterior approach cohort (10%) as compared to the direct anterior cohort (3%), but this failed to reach significance ($P = 0.55$). Additionally, there was a trend toward more postoperative hematomas (2 vs 0, $P = 0.14$) and VTEs (3 vs 2, $P = 0.35$) in the posterior approach group, but these failed to reach significance.

The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice.

Conclusion: 30-day (4.5%) and 1-year (12.5%) mortality following hip arthroplasty for femoral neck fracture remains higher than the mortality following arthroplasty for primary osteoarthritis. The overall rates of deep infection (2%), symptomatic VTE (9%), and dislocation (5%) were higher than what has been previously reported for patients undergoing THA for primary osteoarthritis. There were significantly more postoperative complications and infections in the patients who underwent THA for displaced femoral neck fracture through a posterior approach as compared to an anterior approach. As THA for displaced femoral neck fracture becomes more common, performing the procedure through a direct anterior approach may decrease postoperative complications.